to generate plasma between the electrode and the substrate on the basis of a plasma processing gas,

wherein the plasma processing gas is a mixture gas of a reactant gas and an inert gas, and pressure P(Torr) of the plasma processing gas is set to satisfy the following relationship

$2x10^{-7}$(Torr/Hz)xf(Hz)≤P(Torr)≤500(Torr)

where f(Hz) is a frequency of the high frequency power.

4. (Amended) The plasma processing method according to claim 1, wherein the pressure P(Torr) of the plasma processing gas is set to satisfy the following relationship

$5xP_r$(Torr)≤P(Torr)

where P_r(Torr) is partial pressure of the reactant gas.

5. (Amended) The plasma processing method according to claim 1, wherein the pressure P(Torr) of the plasma processing gas is set to satisfy the following relationship

P(Torr)≤$3.5xP_L$(Torr)

where the pressure P_L(Torr) is a higher one of a pressure represented by the following relationships

P_L(Torr)=$5xP_r$(Torr)

P_L(Torr)=$2x10^{-7}$(Torr/Hz)xf(Hz)

where P_r(Torr) is a partial pressure of the reactant gas.

8. (Amended) The plasma processing method according to claim 1, wherein the plasma processing method is one for performing film forming processing on the substrate.